REMARKS

The Office Action allowed Claims 21-33 and indicated that the subject matter of Claims 8-20, 39-41 and 43 would be allowed if rewritten in independent form. Accordingly, applicant now presents the allowed subject matter of Claim 8 as independent Claim 44, the allowed subject matter of dependent Claim 10 as independent Claim 45, the allowed subject matter of dependent Claim 39 as independent Claim 46, the allowed subject matter of dependent Claim 40 as independent Claim 47, with dependent Claim 48 dependent on the allowed subject matter of Claim 47.

Claims 34-37 have been cancelled.

The Office Action contended that the *Kurogi et al.* reference could be broadly construed under 35 U.S.C. § 102 even though the *Kurogi et al.* reference was neither recognizing nor solving the problem addressed by applicant's present invention. The Office Action further contended that it would be obvious to provide electrodes of *Kurogi et al.* with outer protrusions having a greater surface area than that of an inner protrusion since purportedly a change in size would be within ordinary skill in the art.

The Office Action further contended that the comparison of Figure 3 of the *Kurogi et al.* reference with Figure 4 of the present application still has the same basic configuration with outer protrusions within the boundary of each cell.

Applicant has amended Claims 1 and 38 to address the issues raised in the Office Action since it is clear that the *Kurogi et al.* reference is not providing a structure equivalent to that of the present applicant's, nor creating a cell configuration representative of the necessary resolution of pixels required in a plasma display panel driven in the manner set forth in applicant's present specification.

The *Kurogi et al.* reference is basically sacrificing a brightness and specifically wishes to limit or prevent any expansion of discharge in a column direction, as noted in Column 2, Lines 34-36, to improve the resolution of their particular arrangement of a cell. The discharge produced one side of the main electrode can be prevented from expanding to the other side, as set forth in Column 2, Lines 46-57, of the *Kurogi et al.* disclosure. To compensate for the loss in brightness, the frequency of the dry voltage is raised to sustain the light emission.

The *Kurogi et al.* reference is representative of a drive technology known as an Alternate Lighting of Surfaces (ALiS). ALiS technology was introduced by Fujitsu Hitachi Plasma Display, Ltd. to provide a sufficient number of cells to provide fine resolution, an electrode-sharing principle was employed rather than relying on two dedicated bus electrodes per visible line, a single electrode is used for the visible line above and below. In this configuration, the plasma display panel cannot be driven by a progressive scan mode, but instead has to use an interlaced mode that is well known for the broadcast TV systems.

Attached hereto is a reprint from HDTV Etc. Summer 2003, *Plasma TVs Product Directory*, wherein it is noted on page 133, that the ALiS method uses a simple cell structure where the gap between each sustaining electrode is used as a display line to address the resolution issue. Reference can be made to Figure 5 of the *Kurogi et al.* disclosure and Column 7, wherein an even field and odd field for one scene of image data is created. In the odd field, the odd number of rows are used for display and in the even field, the even number of rows are used for display so that data is presented from one scene in an interlacing manner. An example of the drive sequence can be seen in Figure 6 and is discussed in Column 7, Line 52, through Column 8, Line 25.

Thus, the *Kurogi et al.* reference teaches the ALiS method of the writing and display discharges being performed with respect to display electrode pairs (cells) divided into odd and even number rows for each frame and seeks to increase the number of light-emitting cells over the prior art by providing protrusions on both edges of each display electrode in a width direction. The *Kurogi et al.* reference differs from the present invention as set forth in the amended Claims 1 and 38 by utilizing a structure wherein a discharge is generated even between two adjacent electrode pairs.

The protrusions in the *Kurogi et al.* reference are provided in a width direction of the display electrodes to allow illumination to be effectively generated between adjacent display electrodes in order to realize the drive characteristics required in the ALiS method. The *Kurogi et al.* reference does not provide any structure nor any disclosure relating to a knowledge or awareness of the problems involved in securing a discharge magnitude between display electrode pairs using a sequential scanning method.

Claims 1 and 38 define a gas discharge panel having a panel driving circuit based on a field timesharing display method and defines features of a write period between the scan electrode and the sustain electrode in such a manner that a brightness can be increased at a low energy consumption while improving the illuminance efficiency above conventional plasma display panels.

It is believed that the Examiner was aware of the differences in the *Kurogi et al.* disclosure and was taking a broad interpretation of the independent Claims 1 and 38. The present invention, without the introduction of any new matter, has now addressed these issues with the amendment of Claims 1 and 38, that is clearly not taught nor suggested by *Kurogi et al.*'s utilization of an ALiS method of driving a display panel.

Even if there is a hypothetical assumption that a person skilled in this art would attempt to apply display electrodes designed for on ALiS method of display, disclosed in the *Kurogi et al.* reference, to a display electrode structure for a sequential scanning method, such a person of ordinary skill in the art would reject the necessity of going to the trouble of disposing display electrodes having a structure designed for a discharge gap in a discharge area does not equate to a discharge gap. Thus, we believe that the proposed amendments to Claims 1 and 38 do not add any new subject matter, but rather directly address the technical rejection of those claims.

Finally, newly drafted Claim 49 is also directed to a gas discharge panel based on a field timesharing display method and provides other structural features that provide a gap between the scan electrode and the sustain electrode in each display electrode pair as narrower than a gap between adjacent display electrode pairs. These structural features are certainly neither taught nor suggested in the cell arrangements defined in the *Kurogi et al.* disclosure in Figure 3.

In view of the above comments and the amendment to the claims, it is believed that the case is now in condition for allowance, and an early notification of the same is requested.

///

///

///

///

///

///

///

///

///

If the Examiner believes a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed phone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 22, 2004.

By: Sharon Farnus

Sharon Farnus

Signature

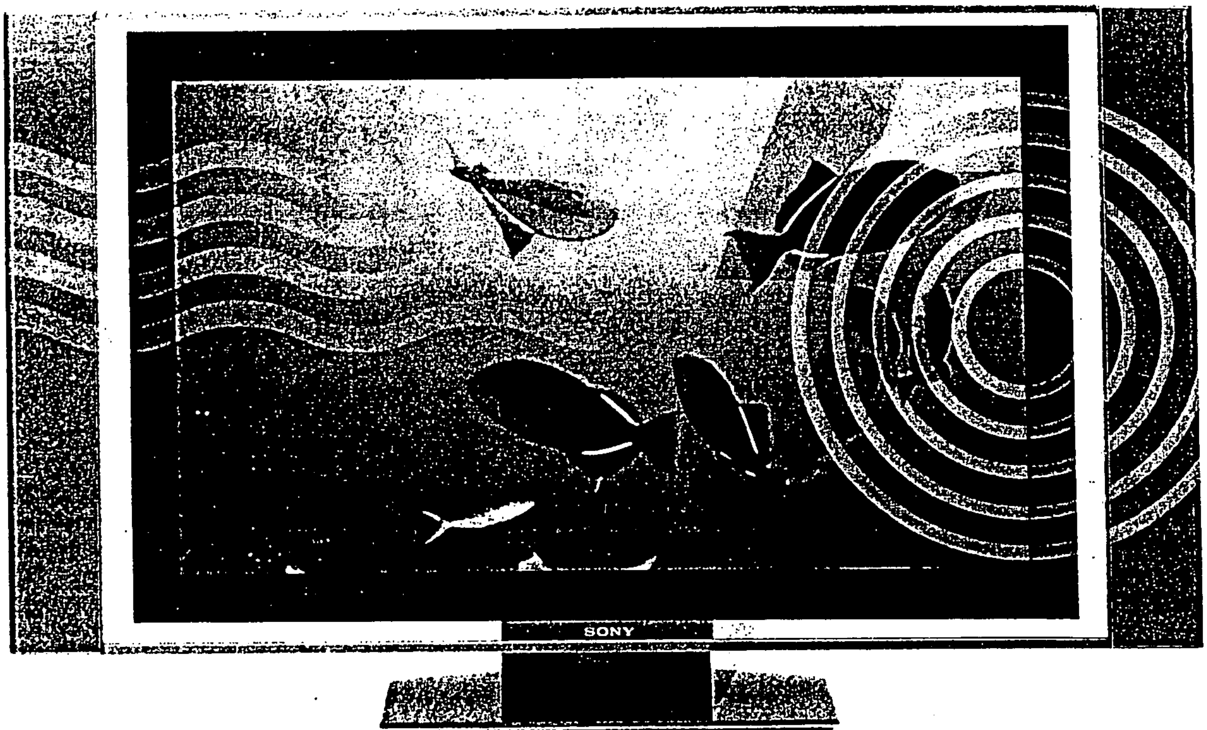
Dated: September 22, 2004

Very truly yours,

SNELL & WILMER L.L.P.

Joseph W. Price
Registration No. 25,124
1920 Main Street, Suite 1200
Irvine, California 92614-7230
Telephone: (949) 253-4920

>PLASMA TVs PRODUCT DIRECTORY



H.G. WELLS, one of the most prolific science fiction writers of all time, predicted flat TVs almost a century ago, in his prolific work, "The Shape of Things To Come." He predicted a futuristic world of traveling to the stars, flying automobiles, changes in world government, and wall-hanging viewers. These screens acted as communications devices with moving images. The thought of placing a viewing screen on the wall also brings to my mind Capt. James T. Kirk, or his successor Jean-Luc Picard, on the bridge of the Starship Enterprise saying, "Put it on screen!" Television is our mirror-like screen, if you will, that links us and leads us beyond space and time. It provides us a visual portal for news and entertainment—leading us to other worlds and other places today much like H.G. Wells' wall-hanging viewers. Television brings experiences ranging from terrorists and snipers in the news to something we like to call "home theater."

As an audience who has grown up with television, we are very familiar with wall-mounted viewing screens through groundbreaking television programs like *Star Trek*. In fact, William Shatner, who played Capt. James T. Kirk on that prolific show, recently wrote a book entitled *STAR TREK- I'm Working On That*, which talks about products that first appeared on this revolutionary television show, including 'tricorders' that morphed into PDAs, 'communicators' that became flip cell phones, and flat-panel viewing screens that became plasma and LCD TVs. In reality, we have all dreamed for a long, long time of placing our television or viewing screen on the wall.

Total sales of plasma TVs (both consumer and business) worldwide reached more than 180,000 units by the end of 2000, and nearly doubled to 350,000 units by year-end 2001. For year-end 2002, it was estimated that more

than 1.0 million units would be sold. Plasma display panel (PDP) sales are expected to rise to more than 6.0 million units per year by 2005 (according to various manufacturers). In fact, it is also predicted that prices will come way down—to the $3,000 range—by 2003 for a 42-inch PDP. As can be seen in the accompanying chart, the suggested retails have already have dropped significantly. If you check plasma TVs on the web, prices for full-featured 42-inch displays are well below the $3,500 range.

PLASMA TVs

Plasma TVs have been with us for the past several years. In the beginning, they were very expensive and not very good. As well, virtually all screens were in the 40-inch or 42-inch wide (16x9) configuration. Originally, it was thought that you had to be very rich in order to afford one of these "flat as a pancake" beauties, or run a mall and use them as an advertising display, or own an airport and use them to show flight information. As the old song goes, "the times they are a changin'."

Plasma TVs are now available in screen sizes ranging from 32- to 63-inches wide. As well, prices have been steadily dropping, and image quality has improved so much that many panels can now display HDTV images at 720p (progressive). Also, you know a product is mainstream when it's being advertised and sold at Sears—probably the largest retailer in the U.S.

TECHNOLOGY

PDP technology features two-glass plates meshed together like a sandwich, (or Oreo cookie if you prefer), filled with an inert gas (like neon or xenon) using electrodes to selectively illuminate gas-filled cells. Try and think of the energy efficient thermapane windows that you may have in your home, and you'll get the picture. Between the glass panels, there can be over 1.0 million 3-dimensional pixel cells capable of producing 16.7 million colors. A Plasma display is basically an array of cells known as pixels, which are comprised of three sub-pixels corresponding to the colors red, green, and blue (RGB). The colored RGB phosphors are illuminated when the gas is excited by voltage running through it (acting like a neon or fluorescent lights) via electrodes (one positive and one negative) producing a current that excites the gas and energizes the phosphors, which causes them to emit light. The electrodes are controlled by digital microprocessors to selectively discharge in a manner corresponding to the images to be viewed.

In essence, the pixels act like microscopic light bulbs, and, in turn, the plasma produces video images by addressing an entire row (or line) of pixels. Mounted on the back of the interior glass plate, there is large electrostatic silicon wafer board holding numerous register digital chips. This digital platform is software and silicon driven. Unlike a conventional picture tube, there are no "hot spots", so there is uniform screen brightness as all pixels are evenly lit across the screen. As well, since they are not affected by magnetic fields, plasma displays can be placed next to any loudspeaker without any disturbances in the picture. Besides brightness being an important factor in plasma display quality, its contrast ratio is equally important because it's a measurement of contrast between black and white. Obviously, the higher the contrast ratio, the blacker the blacks. In turn, this makes all colors more deep and robust.

In the conventional method of displaying images on PDPs, one display line is composed of a pair of two sustaining electrodes with enough distance in between each line to prevent interference between vertical adjacent cells. In the ALiS method, while the sustaining electrodes are arranged at the same intervals, the gap between each sustaining electrode is used as a display line as well, effectively doubling the resolution. In turn, PDPs with a resolution of 1024x1024 can easily display high definition signals. As well, because of using a simple cell structure, the ALiS method realizes a high aperture ratio through smaller, tighter cell size with twice the number of electrodes. While there are some other schemes on the market to improve PDP resolution today, ALiS is the one of the most predominant, and reportedly improves resolution and brightness over standard VGA resolution (852x480) displays. According to Hitachi and Fujistu – the co-creators of this technology, more than a 1,000 lines of resolution (versus 480) can be realized by this method along with increasing the brightness by 1.5 times. This translates into a PDP with a resolution of 1024x1024 and a realized brightness of 500 cd/m2. So, if a PDP uses AliS technology, it has been sourced from the Fujistu/Hitachi plant (FHP) in Japan.

FEATURES

Current screen sizes range from 32-inch to 63-in. HD-Compatible models. Many 42-in. displays feature 800-x 600-pixel resolution or 852-x 480-pixel count resolutions. These monitors can easily display 480p. More PDPs are now available with XGA-quality or better resolutions, especially in the 50-in. and 60-in. widescreen models that offer 1356 x 768-pixel resolution, 1280 x 768-pixel or 1024 x 1024-pixel count resolutions, which can provide HD (High Definition) or near HD-quality resolution. In essence, this means that they can easily display either 720p or 1080i images (besides 480p) from HD source material. These are noted accordingly in the accompanying chart. Virtually all PDPs are widescreen 16:9 models these days. 16:9 sets offer a dramatic rectangular-shaped viewing screen, which is the same shape as the screens found in your local cinema. Widescreen is definitely more appealing because the images are wider, and the benefit of the screen's shape is more perceptible. It's also the shape of HDTV and most movies on DVD.

The included electronics that tells the display device what to do are either housed within the frame of the display itself, or in a separate controller box that is tethered to the screen. More brands include an AV Control Center. The beauty of having a separate box is that it can be easily replaced (or upgraded) as new technology or connectors become available. It also makes for an uncluttered appearance with only one cable snaking its way into the back of the PDP. Some models today may also include IEEE1394 or iLink, and/or DVI input. DVI (or Digital Visual Interface as it is called) is becoming more important as it is the connector of choice for the next-generation of Set-Top Boxes from both cable and satellite companies, because it passes an uncompressed HDTV signal, and also allows for digital copy-protection of high definition content

Most models feature several types of connectors including component video, S-Video, RGB, RGBHV, RGBHD-15, BNC, as well as standard composite video RCA-type jack inputs/outputs found on the back of the display. Most 2003 models also include DVI as well. On the other hand, some models today have only one connector, and are tethered directly to their A/V Controller, which will have all of the inputs and outputs instead, turning the plasma monitor into just that—a display de-

vice. Many models also include either line doublers or progressive scan converters with 3/2 pull-down or Faroudja processing and scalers to further improve overall display image quality (either internally or within their A/V Controller). For the custom install market, many models also include RS-232C control.

TRENDS AND DEVELOPMENTS

A trend started by Philips with their FlaTV line of plasma displays a few years ago was models that included an NTSC tuner with twin speakers turning them into true televisions. Now, brands like Albatron Technology, Elite Video, Hitachi, JVC, Luce, Mitsubishi, Pioneer, Sharp, Sony, and ViewSonic offer one or more models with built-in TV tuners. Mitsubishi even offers one model (their PD-5010), tethered to an A/V Controller (HD-5000) that includes an NTSC/ASTC HDTV tuner with a cable QAM tuner. JVC's new I'Art Palette PD-42WX84, which is scheduled to arrive by mid-2003, will also include an integrated ATSC tuner.

Philips is still one of the few companies that offers a complete Dolby Digital Home Theater In A Box system that includes one of their 42-in. flat panel displays, a 181-channel NTSC TV tuner, and a powerful A/V Receiver with proper amplification and all needed speakers (including subwoofer), priced well under $8,000. While it may be one of the more expensive all-in-one home theater-in-a-box (including display) presently available, it's for the customer who wants that one-stop shopping experience without the hassle of deciding which components to buy.

A rule of thumb for plasma TVs is that the larger the screen size and the higher the pixel count, the higher the price of the display. Just a few years ago, a 42-in. display was the norm. Today, most major manufacturers are offering 42-in., 50-in., and 60-in.+ models. Prices range from under $4,000 to almost $30,000 depending on screen size, features included, and higher pixel counts. The goal of most manufacturers is to get prices down to $100 per inch of screen. Some manufacturers, like Pioneer, are already on fourth-generation models, and see a bright future for plasmas. Other manufacturers, like Samsung, want to make the largest displays. In fact, many manufacturers predict that CRT-based rear projection TVs will be replaced entirely by plasma sets in the near feature, along with new light-engine products such as DLP and LCoS, and LCD.

CONCLUSIONS

Clearly, these models are designed with home theater in mind, and will fit perfectly in many decors. The beauty of PDPs is that many weigh 100 lbs. or less, and can easily be wall-mounted. Of course, you may also place it on a stand or base, or even within an A/V cabinet—making it fit easily into most living/family room situations. A few manufacturers, like Barco and Loewe, even offer specialized or taller bases that make their screens look like a very flat rear projection set, or offer a modern-looking tall silver tubular stands for that futuristic look.

Visual images on plasma displays are quite exceptional, offering a canvas full of richly hued colors, and need to be seen to fully appreciated. They continue to improve technologically with some manufactures already producing fourth-generation models. Since Plasmas have the appearance of a framed windowpane, you might also think of them as your window onto the world. And, they are. It's not surprising that many interior designers are now embracing flat panel displays. Plasmas are also the television of choice today for many custom installations. The future is here and now, and PDPs have warped into our living space so we can view spectacular moving images on a flat panel display monitor placed anywhere within the home. •

— By Dennis P. Barker